AMERICAN ASSOCIATION OF COST ENGINEERS

Vol. 1, No. 5 December, 1959

BULLETIN

IN THIS ISSUE: Cost Index Manual
Project Cost Control
Economic Evaluation of Research Projects

BULLETIN

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Notes from the Editor

Joseph Bleakie will be sorely missed by all his associates.

His unstinted efforts in behalf of the AACE are responsible for much of the progress made in analyzing our current membership and planning for future members. One of the last letters I received from Joe urged me to continue to promote the membership drive he was spearheading. Unfortunately he passed away before the publication of some of the fruits of his labor.

In my last column I mentioned the wide distribution of our members. Since then I have had requests for a geographic breakdown of our members. It follows:

UNITED STATES - 667

Alabama	4	Missouri	7
Arkansas	2	New Hampshire	4
California	76	New Jersey	43
Colorado	3	New Mexico	1
Connecticut	9	New York	98
Delaware	18	North Carolina	1
District of Columbia	1	Ohio	56
Florida	12	Oklahoma	7
Georgia	2	Pennsylvania	102
Illinois	39	South Carolina	1
Indiana	7	Tennessee	10
Kentucky	3	Texas	70
Louisiana	13	Utah	1
Maryland	4	Virginia	4
Massachusetts	26	Washington	4
Michigan	14	West Virginia	12
Minnesota	9	Wisconsin	3

OTHER COUNTRIES - 45

Canada	30	Italy	1
England	3	Japan	1
France	1	New Zealand	1
Guatemala	1	Puerto Rico	1
India	1	Spain	1
Iraq	1	Sweden	1
Israel	1	Venezuela	1

As Art Miller noted in his report — the ripples have certainly traveled far. As we go to press the AACE totals 712 active members.

On behalf of the Board of Directors and myself I would like to extend to you and yours our sincere good wishes for a happy holiday season and a new year of success and good health.

While we are talking of the new year why not make a New Year Resolution to contribute regularly to the *Bulletin*. I will welcome photographs, "Letters to the Editor," news about your job and other items of interest.

Copy deadlines for next year are February 5, May 5, August 5 and November 5.

COVER:

"Zeroed In". A view of the top of the third Aerial Tramway tower on Cannon Mountain, looking up more than 100 feet from ground elevation of 4,000 feet. Tramway crews use the steel-enclosed ladder through which this photograph was taken to ascend and descend the tower for maintenance work. Courtesy of Recreation Division, State of New Hampshire.

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Report from the President

C. Arthur Miller
Canadian Industries Limited
President of AACE

Throw a pebble into the water!

Little do we realize how far the ripples may go. The other day I received the following letter from a large company in Australia:

Central Engineering Department
17th November, 1959

"Mr. C. A. Miller,
Canadian Industries Ltd.,
Montreal, Quebec.

Dear Mr. Miller,

Mr. H. A. Brown, on his return from overseas, brought back a copy of the March issue of the *A.A.C.E. Bulletin*, which I read with great interest.

From the address you presented before the Mid-Atlantic Regional Section in January, I have noted the objectives of the Association and I would like to say that I wish we had a similar body in Australia. Failing that, I wonder if our company could, at some later date, be given the opportunity of joining the A.A.C.E. as a corresponding member. I am sure that while we would benefit from such co-operation we could, at the same time, contribute to the promotion of the goals of the Association, mostly by providing Australian cost information which now, as Australia becomes a potential market for overseas investors, will be of value to American companies.

There are however, two points in your address which are of immediate interest to us, and on which I would be glad to have comments. The first is coding, the second on indices.

You mentioned in your address that cost codes in America are as numerous as companies, and that a cost records committee was formed to develop a standard system. I read about this committee's work in the July issue of the "Cost Engineer", where the paper "Cost Procedures and Control" describes the proposed standard code. About this code I would like to ask the following:

(a) Is this the final form, or is it a proposed form only, published for comments?

(b) If this is the final form, or if a final system will be produced later, what is the likelihood of its acceptance by a wide range of companies?

(c) Would companies like Dow, Monsanto, Kellogg, Lummus and others change their present system?

The reason for asking these questions is that we intend to introduce a new code in our company and we believe that it would be a certain advantage in following a standard adopted by large American companies as the uniformity in terminology is desirable, and the comparison of capital records would be easier.

The other point is in connection with cost indices. I note that a Cost Index Committee was set up within the A.A.C.E. and I assume this committee will cover amongst others, the subject of conversion factors, that is indices showing how much would the cost of a plant be, if it were to be built in another country.

We have to use such conversion factors more and more frequently, but feel that some of the factors available at the present are sufficiently accurate for our purpose. I have therefore, asked our Mr. Treloar who left for America and England recently, to contact you and find out details of the progress made on that subject overseas. If he had a chance to see you, I will hear the answer on his return, if not, I will contact you again as we intend to carry out some research work on the subjects, and I think this is a field where co-operation with the A.A.C.E. might produce worth while results.

In the meantime, I would be glad to have your comments on coding.

Yours sincerely,"

I'm sure this will give a lift to every one of the 59 Founding Members who gathered for the first time at the University of New Hampshire in 1956. Not only does it confirm the beliefs and faith that existed then, but it offers even a greater challenge than before. For those persons who may at times be a little discouraged or pessimistic about the magnitude or difficulties of our tasks, it should give renewed hope.

With others willing to take up the torch it can be firmly stated that the AACE is now solidly entrenched with a strong foothold and a great future.

Elsewhere in these pages is a copy of the minutes of the Board meetings at Pittsburgh last summer. Since that time good progress has been made on a number of items:

The proposed organizational changes in the technical committees have been made and all of the central committees are now staffed and operating. Our Secretary has exchanged a series of letters with the Engineers Joint Council and we are now going through the preliminary stages of applying for Associate Membership

(Continued on page 94)

Project Cost Control

William G. Clark, Dow Chemical Co., Pittsburg, California

CONTROL MEANS "stay within prescribed limits." In cost control, the "limit" is the funds authorized for project construction, for those of us representing owners. For the contractor, the "limit" is the amount of his bid.

In some respects, contractor is more fortunate than owner in this problem of control. The contractor prepares an accurate material takeoff, assigns known prices to the items therein, obtains and analyzes subbids and assigns value to work to be done by his own forces. To all this he adds profit and contingency.

The contractor need only exercise control of scheduling and productivity of his own labor forces. All other parts of the project are essentially on a guaranteed basis. The owner, however, is faced with many other control problems including engineering cost, research and development changes, production department changes and insufficient bid information.

Path to Control

We so not usually wait to authorize funds until after receiving the contractors' bids. At Dow — and I'm sure at many other companies — funds are authorized and engineering and major equipment purchase made long before most contractors know that we are even thinking about building.

Money is committed by management on the basis of one factor only — best return on capital investment. How do we protect this investment and spend funds wisely to complete a project "within prescribed limits?"

The project engineer must be well informed of all financial commitments to be made, from engineering through final construction. It is the cost engineer's responsibility to predict, with the greatest accuracy possible, the probable cost of the project.

Based on this prediction, the decision is made to authorize expenditure of funds. Although the best project can go astray, it is a sad project engineer who cannot foresee it, through cost control, and advise his management so that remedial action can be taken.

Effective cost control has one unavoidable prerequisite. This is the exact stipulation of what allocated funds are expected to provide. When this is obtained, relatively simple tools are required of project cost control: an accurate estimate, a detailed chart of accounts, good project cost analysis, standard cost control forms and accurate project definition.

At Dow's Western Division, we have developed a system embodying these tools and have used it with satisfactory results.

How We Do It

The first step in any project is preparation of a detailed estimate. All estimates are prepared in strict accordance with our standard chart of accounts. Fig 1 is part of an estimate for an addition to an existing plant.

The second step is to prepare a job chart of accounts for the accounting department. This is the key document of a successful control system. Account numbers and values are assigned to all cost items. We segregate project costs under major headings: Dow purchases, Dow engineering, contractor engineering, construction contracts (including change orders) and contingency.

Fig. 2 is from a set of cost control documents — transcribed from the job chart of accounts — that is distributed to parties concerned. Each item of controllable expenditure has its own account number. Value assigned to these items includes all anticipated cost except contingency.

Contingency is carried separately; it is management policy that contingency shall be spent only as absolutely necessary and shall not be used for gold plating or project expansion. Withdrawals from contingency cannot be made to cover project changes in scope without prior management approval.

The third step involves the project engineer, clerical section and accounting department.

All documents involving financial commitments, *i.e.*, engineering purchase orders, contracts, change orders, *etc.*, must bear the appropriate account number and approximate cost involved. This is the responsibility of the project engineer.

The clerical section enters this amount in the commitments column. This starts to focus the current cost picture. At this stage, the contingency shows full authorized amount in the current best estimate column. As the job progresses, this amount is reduced to maintain approximately the same percentage relationship with the total shown under balance to be committed.

The accounting department processes all documents by machine using account numbers as identification. A monthly report is sent to the clerical section, and these costs are entered in the paid-to-date column.

Using Control Sheet

The project engineer reviews the cost control document bi-weekly and enters his current best estimate. With all available current cost data before him, he has a clear picture of his project's financial status. This information enables him to spot immediately any "soft" spots and take corrective action within his authority.

Change orders are separately itemized on the control sheets. This assures the following action on all change orders:

1. Documentation on standard forms of change-order number, description of change, reason for change and signature of persons responsible for change.

2. Inspection of all proposed changes for necessity and impact on cost.

(Continued on page 95)

THE DOW CHEMICAL COMPANY
PITTSBURG, CALIFORNIA

ENGINEERING DEPARTMENT
COST ESTIMATE - BREAKDOWN

JOB NO. 5916
CHARGE
CONSTRUCTION BY DOW ☐ CONTRACTOR ☒
CLASSIFICATION B & A ☒ EXPENSE ☐

DATE Oct. 8-1958
PAGE 6 OF 16
PREPARED BY W. G. Clark
CHECKED BY WGC

ACCOUNT NO.	DESCRIPTION	UNIT	QUAN	UNIT LABOR	UNIT MATERIAL	LABOR	MATERIAL	OTHER	TOTAL
4000	EQUIPMENT								
4060	COLUMNS								
	B-1 Bateh Still								
	1956 Cost: $4300.	ea	1		5750.	—	5750.	—	5750.
	B-1 Dip Pipes								
	1956 Cost: $300.	ea	1		360.	—	360.	—	360.
4140	HEAT EXCHANGERS								
	H-1 Shell Tube								
	1956 Cost: $6200.	ea	1		7430.	—	7430.	—	7430.
4230	SEPARATOR								
	T-32 Phase Seperator								
	1956 Cost: $700.	ea	1		840.	—	840.	—	840.
4240	TANKS								
	X-11 Ins. Superheater	ea	1		300	—	300	—	300.
4270	PLATFORMS								
	B-1 Operating, Hotleem	Ton	2.5	150.	400.	375	200.		575.
	Floor Plate	#	40	0.50	1.50	20.	60.		80.
	Hand Railing	Lf	20	2.	1.50	40.	30.		70.
	Ladder	Lf	20	3.	10	60.	200.		260.
4300	INSTALLATION								
	B-1	ea	1	400.	60.	400.	60.		460.
	H-1	ea	1	150	10.	150.	10.		160.
					SUB TOTAL	1185.	16350.		16035.

Figure 1 — Cost Estimate Breakdown

ENGINEERING DEPARTMENT - ESTIMATE OF COST

DATE:
CHARGE:
PROJECT ENGINEER:
Authorization No.

Job No. 5916 - Plant Expansion
Summary Sheet

THE DOW CHEMICAL COMPANY
PITTSBURG, CALIFORNIA

Amount Paid To:

ITEM	DESCRIPTION	AUTHORIZATION	TRANSFERS	REVISED AUTHORIZATION	PREVIOUS ESTIMATE	CURRENT BEST ESTIMATE	COMMITMENTS	BALANCE TO BE COMMITTED	[illegible]	NET (OVER) OR UNDER AUTH.
4060	B-1	6 280		6280		5603	4550	1053	4620	1660
4061	B-1 Dip Pipes	395		395		596	585	11	596	(201)
4140	H-1	8 140		8140		8428	8356	72	8428	(288)
4230	T-32	920		920		743	743	~~	743	177
4240	X-11	330		330		252	252	~~	252	78
4260	B-1 Insulation	1 950	(1950)			~~	~~	~~	~~	~~
	Total Dow Purchases	18 015		16065		15622	14486	1136	14639	1426
9600	Contract	3 805	1950	5755		4450	4450		4450	1305
	Change Orders	---	1140	1140		1140	560	580	560	580
	Total Contract	3 805		6895		5590	5010	580	5010	1885
	Contingency	1 930	(1140)	790		300	300	~~	~~	790
	Total Job Cost	23 750		23 750		21512	19796	1716	19649	4101
TOTALS										

Figure 2 — Cost Control Sheet

Manual of Cost Indexes

G. William Boston, *Chairman,* Cost Index Committee
Girdler Construction Co., Louisville, Kentucky

As a result of an Association-wide survey conducted last year, the cost index committee concluded that a most pressing need is education in existing indexes and their use.

Accordingly, the committee, as a short-term project, assembled a cost index manual. We started with names of 20 index producers. Inquiries were sent to seventeen of them. Replies were received from 11 active producers; the other six either published price information but were not actual index producers, or did not answer the inquiry.

We covered the following in our questionnaire: name of index; author; how or where it is published; name and address of publisher; when it's published; whether there's periodic summary; for what area of industry or commerce; what it's meant to show; what the author's own ideas are on limitations of its use; where its use is most appropriate.

We also asked whether the index can be used to compare the cost of plants in U.S. locations with similar plant costs in Canadian locations; if so, how this is accomplished. In computing the index for different geographical locations, is any attempt made to assess difference in labor productivity; explain.

The information sent in by various index producers forms a substantial manual. This will be used as a model in actually producing the manual, if the Board approves.

What Indexes Are Covered

The following indexes are included in the manual. Brief description here includes index producer, name of index and its basis.

1. American Appraisal Co.; construction cost index; based on eight labor classifications and 15 material items.

2. Associated General Contractors of America, Inc.; constructographs; based on average wages in principle construction centers and average prices paid by contractors for basic construction materials.

3. Austin Co.; industrial building cost; based on a 100-ft. wide industrial building.

4. E. H. Boeckh & Assoc.; building cost index numbers; based on local cost surveys of material and labor in 48 major pricing areas.

5. F. W. Dodge; construction costs; based on five items of basic material and nine classifications of labor. Also takes into account withholding tax, social security, sales tax and attitudes of bidders in competitive market.

6. *Engineering News-Record;* construction cost, building cost; based on hypothetical block of construction made up of steel, lumber, cement, and common labor. (Building cost index uses skilled rather than common labor.)

7. *Factory Management & Maintenance;* cost index of plant maintenance; based on composite of 39 materials and 5 labor groups that go into manufacturing buildings and equipment.

8. Hugh C. MacLean Publ. Ltd.; *(Engineering & Contract Record Magazine);* cost of construction, wage rates, material price indexes; based on four basic construction materials and three labor classifications.

9. Marshall & Stevens Co.; building cost indexes, comparative equipment costs; based on material and labor costs at local levels, based on selected equipment prices.

10. W. L. Nelson; eight materials indexes, labor indexes, Nelson's index; based on basic construction materials, equipment and labor.

11. Turner Construction Co.; building cost index; based on typical building, cost experience of labor, material, productivity of labor, efficiency of plant and management, competitive conditions, forecast of trends.

Producing a Manual

The committee has attempted to estimate the cost of producing such a manual so that the Association can decide whether to publish or not. Index producers were again contacted to determine cost of 600 copies of literature submitted previously.

Our conclusions are that some index material will be furnished free of charge, and some will have a nominal reprint charge. The manual, assembled in a hard-cover binder, can be sold at around $10/copy.

This manual represents a collection of basic reference information on the most important commercial indexes in the United States and Canada. It is essentially a one-shot publication and will not be updated from year to year by the AACE.

It enables the index user to evaluate basis and purpose of each index so that he can make his own arrangements for receiving continuing index information. It also gives him a means of comparing the history of the indexes. The next edition of this manual would be published in about ten years. The index committee hereby turns over this prototype of a cost index manual to the AACE Board of Directors for their action.

See page 95 for information on how to obtain a copy of the AACE Cost Index Manual.

Economic Evaluation of Research Projects

R. C. Brown, Chemstrand Corp., Decatur, Alabama

IT'S BEEN ESTIMATED that the process industries currently spend about a billion dollars each year for research. Corporate research budgets of five million dollars are not uncommon.

Consider the data of Table I. Three things stand out: First, research is a substantial part of the overall effort of these industries. Second, research expenditures take a substantial percentage of sales. Third, in a well-established industry with high-volume products that do not become obsolescent, relative research effort is low.

If we have construction projects of the magnitude of typical research budgets, we figure justification very closely. Then during the construction period, we control costs. This procedure has evolved to keep construction costs competitive.

Research expenditures, of course, compete for the same dollars as construction projects. Thus they require economic direction to make them as profitable to the company as possible. Some researchers, though, abhor the thought of applying economic principles to research. Even so, large research expenditures and intense competition make it desirable to concentrate research effort where it will do the most good. Economic evaluation is one tool available to research management for this purpose.

Grounds for Economics

Few critics of economic research evaluation stop to consider what economics is. It is the study of relationships between the means of production and the consumption of those things produced. In many companies, study of consumption of products is handled by market researchers. This is only half the economic picture. Study of what is required to produce a given product completes the realm of normal economic evaluation.

Applied to research projects, economic evaluation is a study to see whether it is possible to commercialize results of the project, if technical aspects of the problem are solved. Economic evaluation helps select the most promising projects.

Granted that not all types of research are amenable to economic evaluation. Seldom can evaluations be made on exploratory work such as the early work by Carothers and his co-workers on high polymers that led to the modern synthetic fiber industry. Development of a commercial product resulting from such basic research takes a long time — in excess of the period for which economic evaluations are valid.

Applications research — work done for the sales department — also is not normally evaluated. Emphasis is on a quick solution to a customer problem. But this type of work is necessary to maintain sales volume and is really an item of selling expense. Too, formal evaluations are not undertaken in many cases because the answer is obvious.

It may appear that not much research is left for economics. But Table II shows that actually only 15-30% of the research has been ruled out. The majority of research is still left to the economic evaluator.

Uses of Research Evaluations

Let's consider an example to illustrate how economic evaluations can be used in research projects — particularly for research planning aids, process definition and choice of alternatives.

Phenol can be separated from coal tar. Originally, commercial phenol was produced entirely from that source. Just after World War I, demand far outstripped supply, and the price soared from 9½¢/lb. to 45¢/lb. It became necessary to synthesize phenol to meet the demand.

How should phenol be synthesized? A chemist can write down many ways to make phenol. A brief consideration of raw materials prices and availability, theoretical and probable yields, rough processing costs, *etc.*, narrows the list greatly.

For phenol, these considerations rule out laboratory methods such as hydrolysis of a diazonium salt of aniline. In the early '20's, dehydrogenating cyclohexanol would have been ruled out too. This shows one

What CPI Spends for Research — Table I

Industry	Research % of Sales	Net Profit % of Sales
Petroleum	1	10
Pulp and Paper	1	7
Cellulosic Fibers	2	4
Chemical Process	2.5	7
Chemical	3	10
Extractive and Mining	4	10
Pharmaceutical	6	13

way in which economic evaluation can aid research planning.

Normally, though, economic analysis cannot narrow the list to one best method. At early stages of research, it must be assumed that technical problems can be solved. However, much evaluation must be based on fragmentary data. This leads to another use of economic evaluations in research work — identification of objectives and needed information. Certain methods of manufacture may be attractive only if certain processing conditions are met. Knowledge of these key conditions permits research effort to be concentrated in the most important areas.

Often several possibilities are explored on a small scale. People contemplating synthetic phenol manufacture 40 years ago had several alternate avenues open to them. These may have included, for example, direct oxidation of benzene, the sulfonation route and the chlorination route. Undoubtedly, all of them looked good — if the technical problems of yield, quality, *etc.*, could be solved.

Laboratory bench studies might have demonstrated feasibility of two of them, say the sulfonation and chlorination routes. With more data in hand, a better evaluation of alternative routes could be made. The objective of such evaluation now was which process should be taken through the next stage of development, the pilot plant.

Two processes might be piloted. If the pilot program were successful, the project left the area of research and development. The sulfonation process was used as the first process for production of synthetic phenol. Another company soon used the chlorination process. These processes were good but not ideal. Two other processes have since been put into economic commercial operation — the Raschig process and the cumene process.

Other Uses of Evaluation

Use of evaluations as an aid to market research is apparent from the definition of economics as a study of relationships between means of production and consumption of goods. The market researcher uses these studies as an aid in estimating possible markets. The ability of a product to break into a given market is dependent in part on price. In addition, costs are dependent in part on volume. The economic evaluator and market researcher must work in close alliance.

Economic analyses are used by the purchasing department in evaluation of raw materials or negotiation of raw material prices. This is usually confined to products where there is a small number of suppliers or where potential demand far exceeds current supply. This may seem remote from research projects, but raw material prices and availability are often key factors in the attractiveness of a chemical process.

Economic evaluations differ so in scope and accuracy that it is convenient to denote level of accuracy some way. The method used in my company defines three levels. The *exploratory* estimate is the "quickie" evaluation, based on patent and literature data. The *preliminary* evaluation is based on data from laboratory or early pilot plant work.

The *definitive* evaluation is based on firm pilot plant data and rather extensive design studies or is taken from the records of operating plants. The definitive type is rarely carried out in the research department. These evaluations parallel the classical concept of project progress — exploratory research, bench-scale work, pilot-plant operations and commercial plant operations.

When research projects are evaluated, the procedure is similar to determination of profitability of a commercial plant. The only difference is that research projects must be evaluated with less firm data. We are forced to estimate much of the required information. This is particularly true of exploratory evaluations, which represent most of the evaluations undertaken in research.

Exploratory evaluations are based mainly on correlations. There are two primary sources of data for these correlations — the technical literature and the bulging files of the accounting department. The latter source is best, but since objectives of the accounting department and the research department are rarely the same, most accounting data must be recast to be useful in estimating costs.

I have attempted to show you the uses of economic evaluation in research and development. Although imperfect, these evaluations are a valuable aid of research management in selecting projects with the greatest chances of success.

Economic Evaluation Applies to Most Research — Table II

	Economic Evaluation		No Economic Evaluation	
Industry	New Products	Product Improvement	New Applications	Basic Research
Petroleum	35%	50%	5%	10%
Pulp and Paper	30	45	15	10
Cellulosic Fibers	25	50	10	15
Chemical Process	45	30	15	10
Chemical	45	30	15	10
Extractive and Mining	50	20	20	10
Pharmaceutical	70	5	10	15

Directors Meeting at Pittsburgh

June 23 and 27, 1959

In addition to attending all technical meetings and festivities of the June meeting in Pittsburgh, your board of directors conducted formal meetings just before and after the convention. During three sessions on Tuesday, June 23, at Webster Hall Hotel, the following matters were discussed and/or acted upon:

1. *Business Meeting*
   The agenda for the business meeting of the full membership as scheduled for Tuesday, June 25, was settled. (Minutes of this meeting have already been published in the preceding issue of the Bulletin.)
2. *Membership Certificate*
   The final details of the membership certificate were developed and these admission dates were set:
   Founding Members — June 1, 1956
   Charter Members — September 1, 1956
   Other Members — By year until current
3. *Nominating Committee*
   To insure that future nominating committees have guidance from members who have a broad acquaintance with the membership as well as with the requirements of each office it was agreed to have the 3 past presidents serve on the nominating committee.
4. *Cost Index Committee*
   Chairman Boston displayed a sample report of great interest. As a result of the subsequent membership poll, it was decided to prepare 200 copies for sale to the membership. The committee was instructed to obtain quotations for binders and printing before fixing the price, which was estimated to be $10.
5. *Technical Committees*
   Director W. E. Hand presented a recommended reorganization of the technical committees as follows:
   a. Capital Cost Estimating
   b. Capital Cost Control
   c. Operating Cost Estimating and Control
   d. Profitability
   e. Cost Indices

   Terminology for each division would be the responsibility of each committee. As presented at the business meeting by Mr. Hand, this new organization was approved and will become the main working group of the Association.
6. *Treasurer's Report*
   Treasurer Chilton reported that expenditures were in line with the budget established at the January meeting. The financial outcome of the current meeting was in doubt. A working arrangement had been developed between the Treasurer and Executive Secretary in the handling of all funds, wherein the Treasurer was to be responsible for payment of all major bills. It was decided that a small fee could be paid if necessary to assure that the audit made each year was adequate.
7. *Engineers Joint Council*
   It was decided to contact the Engineers Joint Council with a view of exploring future affiliation.
8. *Publications*
   J. Adams of the Publication Committee gave a brief report, which resulted in discussion regarding publication policy. (See page 91) Preferred procedure involves selection of a committee composed of one member from each Regional Section to act as a field reporter, making recommendations to the Chairman or Central Clearing Group. Articles approved by this committee would then be forwarded to the Technical Editor for final revisions before publication in the *Bulletin*.
9. *The Bulletin*
   Ed Shanken invites contributions from all members in the form of photographs, "Letters to the Editor," News of Regional Sections, job changes or promotions, and other similar items which are of interest to the membership.
   Advertising rates were set as follows:

Less than ⅛ of a page	$10.00 minimum
⅛ page	15.00
¼ page	25.00
½ page	50.00
Full page	100.00

   There is an additional charge of $5.00 for having mail sent to an AACE box and then forwarding it to the advertiser.
   Members are allowed two free ads per year in the Man Available Section.

In the final meeting on Saturday, June 27, the events of the preceding three days of the annual meeting were discussed briefly, with a view toward future improvements.

Emphasis was concentrated on:

10. *Houston Meeting*
    A preliminary program of the 1960 annual meeting in Houston was presented by Earl Clark, who was eventually picked as Program Chairman. A hotel type meeting is planned in order to save transportation time and expenses. The tentative dates are June 20-22. (June 13-15 were substituted since the meeting.)
11. *Dues*
    The controversial question of whether to combine regional and nationel dues was debated at

(Continued on page 91)

AACE Publication Policy

Experience since the founding of the AACE has indicated the desirability of having a written set of rules and regulations covering the presentation and publication of papers presented at the national meetings. Said rules and regulations to have been approved by the Board of Directors.

Since the AACE is a young organization it is felt wise not to insist on too stringent rules and regulations at this time, but to have sufficient rules and regulations to enable both the Program Committee and the Publications Committee to function efficiently.

As the Association grows and strengthens it might be desirable to strengthen the rules.

One of the major objectives of the Association is to serve as a forum for the accumulation, exchange and publication of worthwhile contributions to the literature of cost engineering. It shall be the function of the Publications Committee to undertake, under these rules and regulations, to get as widespread dissemination of the various papers presented at AACE meetings as possible. This should be done by publication in the various business and professional journals, the *AACE Bulletin*, and by distributing reprints. The Committee shall welcome and be guided by suggestions from the Officers and Directors of the AACE.

Rules and Regulations

1. All papers presented at national meetings shall automatically be available for publication in the *AACE Bulletin*. It is AACE policy to encourage publication in other media also, with appropriate acknowledgment to the Association. Under normal circumstances, such publication will be arranged by the Publications Committee. However, the author may notify the committee that he wishes to make his own arrangements for publication or wishes to withdraw his paper entirely from consideration.

2. The author shall provide and send to the Program Chairman fifteen (15) copies of an abstract of the paper for use by the Publications Committee at least three (3) months prior to the meeting date. Authors shall also submit five (5) copies of the proposed paper to the Program Chairman at least six (6) weeks prior to the meeting date. The author shall indicate how much time he will require for presentation of the paper and whether or not he has any preference regarding the journal or journals to which his paper might be offered for publication.

3. After the Program Chairman has received copies and/or abstracts of the proposed papers he shall notify authors of acceptance or rejection of their papers for presentation at national meetings.

4. At least one (1) month prior to the meeting date the Program Chairman shall send to the Chairman of the Publications Committee four (4) copies of each paper which has been accepted for presentation at an annual meeting.

5. The Publications Committee shall then send copies of the accepted papers to those Journals which would be the most desirable media for publishing. Each accepted paper shall be sent to only one journal at a time and not submitted to another journal unless the first journal has indicated rejection for publishing or sufficient time has elapsed, without reply, as to imply rejection. The Editors so contacted shall be asked to indicate within two (2) weeks which, if any, papers they desire to publish. Upon rejection by any one journal the Publications Committee shall contact another journal immediately so that ultimate publication of all worthwhile papers will be arranged if at all possible.

6. At the Annual Meeting, or by correspondence as soon as possible thereafter, the Publications Committee shall coordinate the results of the response from the various journals contacted previously. It shall make definite and final arrangements with the authors and the editors regarding publication. When desirable it will also arrange for reprints for AACE membership distribution.

7. The Board of Directors shall retain final responsibility over publication matters. However, the Board shall delegate to the Publications Committee the responsibility of placing papers for publication.

8. At the discretion of the Publications Committee, papers presented at regional meetings may be made subject to the rules and regulations for national meeting papers, in addition to any rules and regulations set up by the regional chapter.

Approved and adopted by the Board
of Directors January 30, 1959.

Directors Meeting at Pittsburgh

(Continued from Page 90)

length. A motion to combine them was defeated. A compromise motion involving the setting up of an administrative procedure jointly by the Treasurer and Sponsor of the Regional Sections, under which the Regional Sections may elect to have their dues collected by central headquarters, was finally approved.

12. *Bibliography*
William Clark had discussed a joint venture with the Bureau of Mines (represented by Sidney Katell). He reported that the usual arrangement involved sharing some of the costs of preparing the bibliography list. A maximum expenditure of $200 annually was approved for this purpose and Mr. Clark was authorized to negotiate a suitable arrangement with the Bureau of Mines.

13. *Executive Secretary Headquarters*
Dr. Zimmerman suggested a permanent office for central headquarters be set up outside of the home of the Executive Secretary. Such an arrangement would give more stability to the organization and create fewer problems in the event of change in the staff of this office. (This suggestion has been carried out.)

News from the Regions

ORGANIZATION OF NEW SECTIONS

In order to provide an opportunity for group activities at the local level, the AMERICAN ASSOCIATION OF COST ENGINEERS encourages the formation and establishment of regional sections.

The advantages of closer personal relationships, opportunities for discussion of mutual problems and the frequent dissemination of data vital to the profession are a few of the reasons for joining or forming a section.

If you reside in an area not covered by an existing section and would like to benefit from and assist in its organization, contact: B. V. Nemeth, *Chairman, Regional Sections Committee, AACE*, 840 Madison Avenue, Painesville, Ohio.

Members residing in the following areas can write to the people listed below. These men are "spark plugging" sections in their regions.

BATON ROUGE, LOUISIANA
Carlo H. Polito, Ethyl Corporation, P. O. Box 341, Baton Rouge, Louisiana.

DETROIT, MICHIGAN
Gilbert A. Smith, The Bristol Company, 10329 West McNichols Road, Detroit, Michigan.

ESSEX, ENGLAND
John H. Herbert, 22 Fairway, Leigh-On-Sea, Essex, England.

KANSAS CITY, MISSOURI
Lloyd E. Weast, Jr., 5620 East 48th Street, North, Kansas City 16, Missouri.

MIAMI, FLORIDA
John A. Condon, 691 Northwest 45th Street, Miami 37, Florida.

ONTARIO, CANADA
Frank Grosvenor, The Hydro-Electric Power Commission of Ontario, 620 University Avenue, Toronto 2, Ontario, Canada.

QUEBEC, CANADA
James Bachman, 175 Hemlock Drive, Beaconsfield, Quebec, Canada.

SEATTLE, WASHINGTON
Edward Fila, 1201 Warner Street, Sedro-Woolley, Washington.

SOUTH CHARLESTON, WEST VIRGINIA
W. F. Gott, Union Carbide Chemicals Company, P. O. Box 836, South Charleston, West Virginia,

ST. PAUL, MINNESOTA
Dr. Bernard J. Gaffney, Wood Conversion Company, First National Bank Building, St. Paul 1, Minnesota.

Members in the Cincinnati, Los Angeles, Niagara Falls, Oak Ridge, Savannah and St. Louis areas are working on the organization of sections in their regions. If you would like to help develop a section in these areas contact Mr. B. V. Nemeth.

CHICAGO — MIDWEST SECTION

The Chicago-Midwest Section held an initial meeting for the 1959-60 season on October 1 to outline a program for the coming months and to establish a change in their meeting day. The following program schedule was formalized:

November meeting: At this meeting Mr. George Reihmer, an architectural engineer from Perkins & Will, was the guest speaker. He presented movies of European architectural advancement, comparing this with our present day architectural concepts. The second half of the program, led by Mr. C. J. Bauman of the U. S. Gypsum Company was concerned with the subject of computer programming and operation.

December meeting: Mr. Charles Goodman of the Material Service Corporation spoke to the section. His topic was "Cost and Use of Light-Weight Aggregates". The second half of the program was led by Mr. Richard Schaffer and pertained to the AACE Educational Committee work.

January, 1960 meeting: At this meeting the section expects to entertain a speaker from the steel industry, whose job will be to convince them that their previous speaker on light-weight aggregates and concrete did not have the latest facts and figures. This gentleman may also be able to fill them in on the steel availability picture due to the strike effects. Mr. John Foushi of Inland Steel will arrange for the speaker and will also conduct the balance of the meeting regarding the National AACE Cost Records Committee work.

February meeting: Messrs. Edward Grahl and Henry Thorn of Amoco will arrange for a speaker and perhaps a film of the chemical industry. It has been suggested that International Minerals and Chemical Corporation has several excellent short films of the chemical industry that may be available. Ed and Henry will also cover the second half of the program with information regarding the National Profitability Committee and their concepts of how a local group might function if enough interest could be generated.

March meeting: The program calls for a speaker from one or more of the major equipment manufacturing companies regarding present day costs and expected escallation on mechanical equipment. The second half of the meeting wiil deal with topical purchasing. problems.

April meeting: The section will have a speaker from one of the major electrical apparatus supply companies, such as General Electric or Westinghouse; the second half of the meeting will deal with present day electrical cost estimating.

May meeting: Nothing has yet been scheduled for this meeting.

June meeting: This will be a dinner meeting and the final one for the year. The speaker has not yet been named.

At their October meeting the Chicago-Midwest Section also decided to vary the meeting place from meeting to meeting in order to reduce operational cost as much as possible. The first Wednesday of each month was selected as the regular meeting day.

DELAWARE VALLEY SECTION

The September meeting of the Delaware Valley Section was held at the Engineers Club of Philadelphia with 24 members and 11 guests in attendance. Speaker of the evening was Mr. William Gorman of Lukens Steel Company, who gave a talk entitled "Some Thoughts on Getting the Business". The talk dealt with clad steels and the economies gained by using them instead of solid alloy materials.

During the business meeting following the talk, Herman Chapman gave a report on the national convention in Pittsburgh; the group discussed ways and means for increasing membership; and there was a discussion concerning the program for future meetings. Herman Chapman was named chairman of the Membership Committee, and he proposed a Board of Director's meeting to discuss the membership problem. Jack Farrell was made Program Committee Chairman.

The speaker at the November meeting of the section was Mr. Frederick Hickler, Project Manager for the firm of Vincent S. Kling, Architect, Assoc. Mr. Hickler delivered an illustrated talk on "Recent Developments in Building for Industry," which covered cost and construction.

NEW ENGLAND SECTION

The New England Section held their regular monthly meeting at the Massachusetts Institute of Techology on October 13, Featured speaker of the evening was Mr. Richard W. Albrecht of the firm of Fay, Spofford and Thorndike, who presented a most interesting and informative talk entitled "Foundations: Design and Cost."

The committee nominations made during the business meeting were as follows:

Membership Committee:
Mr. Dan O'Connell, Metcalf & Eddy
Mr. John Dalco, Stone & Webster

Program Committee:
Mr. Len Mortensen, Metcalf & Eddy

Steering Committee for national convention: (temporary)
Mr. A. W. Doolittle and Mr. M. B. Stempson both of Jackson & Moreland

A motion to look for another possibly less expensive place to hold the section's meetings was referred to the Program Committee for further action. Another motion made to appoint a Social Committee for the purpose of promoting an annual social affair was defeated.

Mr. Albert Rich, of the firm of Metcalf & Eddy, was the guest speaker for the November 10 meeting of the New England Section. His topic was "Cost of Structures".

SAN FRANCISCO SECTION

The regularly scheduled October meeting of the section took place at Tiny's Restaurant in Oakland with an attendance of 40. A cocktail period from 6:00 to 7:00 p. m. preceded a diner.

During the dinner President Paul A. Hesselgrave asked informally for expressions of opinion relative to a social gathering outside of the regular meetings. He suggested that the meeting might take half a day and end with wives in attendance at a dinner-dance. A number of favorable replies were offered from the floor, calling for such a meeting after the first of the year.

Speakers for the meeting were Mr. J. L. Malpass, of Indenco Engineers, Inc., who spoke on "Cost Engineering Standards and What the AACE Can Do for the General Contractors and Principal Sub-Contractors" and Mr. W. G. Clark, of Dow Chemical Company, who told about AACE publications, bibliography and educational activities. After the talk by Mr. Malpass, the meeting was opened to questions and much discussion resulted. Jack Williams of the Navy offered to obtain unit cost studies prepared by the Navy. Lloyd V. Lindquist suggested the possibility of members exchanging unit costs monthly via a questionnaire. Considerable interest in this suggestion was expressed from the floor, with warnings of the dangers involved.

Mr. William E. Hand, AACE Director of Technical Committees, gave a brief history and review of the organization of the Association's five technical committees and introduced the following people:

Thomas E. Drisko, who spoke on the scope and work of the Profitability Committee;

M. C. Lowman, who described the background, work and goals of the Committee on Operating Cost Estimating and Control;

G. A. Anderson, who discussed the work of the Capital Cost Control Committee.

W. E. Hand then described the two remaining technical committees, i.e. the Capital Cost Estimating Committee and the Cost Indexes Committee. During the discussion following the descriptions of the technical committees, a considerable number of people made comments and offered suggestions on topics ranging from the desirability of accurate unit costs to cost codes and cost classifications.

Other business consisted of an announcement of the appointment of W. Kenneth Aydelotte to the Program Committee, the introduction of three new members, an appeal by the chairman of the Membership Committee, and a discussion about the program for the forthcoming meeting.

WHAT'S HAPPENING . . .

Edward D. Lewis is a Partner in the newly formed firm of Lewis-Dickerson Associates of Watertown and Massena, New York. He was formerly affiliated with Sargent, Webster, Crenshaw & Folley, Architect-Engineer Associates of Massena, New York.

Norman S. Thomason with Ebasco Services, Inc. has been transferred from Jackson, Mississippi to Helena, Arkansas.

William R. Thompson, formerly located with Canadian Bechtel Ltd. in Saint John, N. B., Canada has been transferred to the New York office of Bechtel Corporation.

Zenas A. Stanfield has been transferred from the Belle, West Virginia Plant of Diamond Alkali Company to the Chlorinated Products Division of this company located in Houston, Texas.

Thomas Charles is in France setting up the estimating and cost control departments for a new French engineering and construction company. Tom is Chief Estimator with Catalytic Construction Company of Philadelphia, Pennsylvania.

Joseph S. Bleakie, 51, Chief Estimator of the Petro-Chemical Division of Tellepsen Construction Company of Houston, Texas, died December 6 following a heart attack.

Joe was a native of Boston but went to Houston in 1946 to join Tellepsen. In 1952 he was named chief estimator.

He had just been elected to the AACE Board of Directors for a two year term starting January 1. He was also chairman of the AACE Membership Committee and had acted as Vice Chairman of the Gulf Coast Section. He was also a member of the Harvard University Alumni Association and the Houston Engineering and Scientific Society.

Personnel Service

MEN AVAILABLE

Cost Engineer. B.A. in Economics, with additional graduate courses. Ten years experience in cost control, cost forecast, planning and scheduling, property assets and quantity control. Available October 1. J. P. Majkut, 178 Summerfield Drive, Homestead Park, Pennsylvania.

Cost Engineer. B.S. in Civil Engineering. Eight years experience. Supervised preparation of capital cost estimates, order of magnitude estimates, construction grade estimates, also manpower scheduling and analysis, expenditure predictions, unit cost information, cost control and progress scheduling. Available as a consultant or on a permanent basis. Prefer South East. F. S. Radwanski, 104 Beech Street, Pensacola, Florida.

Report from the President

(Continued from page 83)

in the E.J.C. two hundred copies of the cost index reference manual as developed and described by the Cost Index Committee at the Annual Meeting are being made up in suitable binders and should be available early next year. Provision is being made for additional copies if the demand exceeds the initial two hundred.

Formal membership certificates have been printed and are currently being signed by the respective presidents.

Owing to the generous co-operation of the Bureau of Mines, the Association has now entered into a formal agreement with that organization with respect to a bibliography on cost engineering subjects. Under the agreement the bibliography of Investment and Operating Costs which is being produced currently by the Bureau of Mines will be enlarged to include a number of additional technical magazines. Coverage of these additional magazines will be carried out by members of the AACE Bibliography Committee. All information will be sent to the Bureau of Mines which will organize it, publish it and provide the AACE with 800 copies each year. The AACE contribution towards this work will be $200 per year.

Because there has been mixed reaction to the method of collecting regional fees, the Board decided to cope with this problem for the present by offering to collect regional dues on behalf of any region requesting them to do so. All regions were advised accordingly and we hope this will offer a suitable solution until the best course of action becomes more obvious.

Under the guidance of Earl Clark as Program Chairman and Tom Ponder as Convention Arrangements Chairman the annual meeting at Houston is well under way and a fine program is in store.

At this point I realize that 1959 is rapidly drawing to a close, as well as my term of office. It has been an honour to serve as your president and I wish to take this opportunity to express my appreciation for the confidence you have shown in me and for the support I have been given. Members of the Board and the Executive Secretary have been competent and co-operative and it has been indeed a pleasure to meet and work with them. I would like to thank them as well as all the committee chairmen and members who have given so unstintingly of their time and effort to make 1959 a year of progress for the AACE.

We wish you the compliments of the season and look forward to meeting more of you next June in Houston.

Technical Papers

Available free, AS LONG AS THEY LAST, to AACE members, (.50 to nonmembers), by request:

1 — "Accurate Ways to Estimate Pipe Costs" by W. G. Clark

2 — "Computer Speeds Economic Evaluations" by J. F. Adams, W. L. Massey Jr. and M. Dmytryszyn

3 — "Construction Cost Trends 1913-1957 as measured by the ENGINEERING NEWS-RECORD Cost indexes"

5 — "Ratio Cost Engineering" by H. C. Bauman

6 — "The Cost of Preparing an Estimate" by K. G. Wolfe

7 — "Which Depreciation Method is Best" by B. J. Gaffney

18 — "Estimate Cost of Compression Plants" by I. Bromberg

19 — "Heat Exchanger Cost Data" by H. J. DeLamater ($1.00 to nonmembers)

20 — "Estimate Cost of Fractionation Systems" by I. Bromberg

21 — "Educational Requirements from the Standpoint of Industry for Future Engineering Graduates" by D. I. Meikle

22 — "Project Evaluation by the Time Value of its Use of Money" by E. H. Flewellen, Jr.

23 — "The Case for Scientific Research in Cost Engineering" by L. R. Shaffer

24 — "A Course in Chemical Engineering Economics" by J. Happel

25 — "Cost Control in Construction" by W. McGlaun

27 — "Economic Evaluation of Research Projects" by R. C. Brown

28 — "Statistical Methods in Cost Engineering" by A. F. Dershowitz

29 — "Cost Procedures and Control" by D. G. Adkins and F. S. Radwanski

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The Association is endeavoring to publish in the *Bulletin* or make available reprints of papers that are related to the field of Cost Engineering. If you are preparing a paper or have presented previous papers in this field please send a copy to the Editor so that it can be included in future surveys of data in this area.

COST INDEX MANUAL

A special pre-publication price of $8.00 to AACE members and $10.00 to non-members will be in effect until February 25, 1960. Send your check to the AACE Executive Secretary now, so that a manual can be reserved for you from this limited printing.

AACE INSIGNIA

Every member of the AACE will want to wear this distinctive personal jewelry which features the attractive AACE emblem.

Sterling Silver Lapel Button $2.30

Sterling Silver Tie-Clasp $3.80

Send your order and check to:

EXECUTIVE SECRETARY
American Association of Cost Engineers
Durham, New Hampshire

Project Cost Control

(Continued from page 84)

3. Inclusion of changes in the proper place on cost control forms.

The last column on the cost control sheet shows current over and under expenditures on the project. The transfer column provides a means of switching funds from one account to another, *e.g.*, owner purchase to contractor purchase, contractor construction to owner construction forces, *etc.* All transfers are carefully scrutinized for reason and amount before being authorized.

Some of this program may seem to limit the project engineer's ability to manage funds as he sees fit. However, use of this system enables us to carry out our general policy of expending funds only for the specific purpose authorized.

The system guarantees that changes from the schedule of expenditures in the original appropriation are approved in writing by proper authority. There's reluctance to sign your name to a change order unless you are fully prepared to justify the change.

An important benefit of this control method is spotting potential surplus early in the project. With this knowledge, management is able to authorize project expansion and inclusion of items previously considered desirable but not absolutely necessary.

Regional Section Directory

If you reside near one of the regional sections contact the secretary so that you can benefit from the worthwhile activities of your region. If a business trip coincides with a meeting of a section outside your region you are welcome to participate in any and all activities.

CHICAGO — MIDWEST

Chairman — Donald I. Meikle, Meissner Engineers, Inc., 300 West Washington Street, Chicago 6, Illinois.

Secretary — E. John Mark, The Pure Oil Co., 35 East Wacker Drive, Chicago 1, Illinois.

DELAWARE VALLEY

President — Marion W. Rodgers, E. I. duPont de Nemours & Co., Wilmington 98, Delaware.

Secretary — Anthony J. Gaeto, Pottstown Metal Products Div. of Cochrane Corp., P. O. Box 269, Pottstown, Pennsylvania.

GULF COAST

Chairman — John E. Haselbarth, Pritchard & Abbott Engineers, 2530 West Holcombe Boulevard, Houston 25, Texas.

Secretary — Thomas C. Ponder, *Petroleum Refiner*, P. O. Box 2608, Houston 1, Texas.

METROPOLITAN NEW YORK

Chairman — Wesley J. Dodge, Socony Mobil Oil Co., 150 East 42nd Street, New York 17, New York.

Secretary — Thomas J. Kent, Jr., The M. W. Kellogg Co., 711 Third Avenue, New York 17, New York.

NEW ENGLAND

President — Harold J. DeLamater, Anderson-Nichols and Co., 150 Causeway Street, Boston 14, Massachusetts.

Secretary — Bernard Fefferman, Badger Manufacturing Co., 230 Bent Street, Cambridge, Massachusetts.

NORTHEAST OHIO

President — Robert E. Jones, The Standard Oil Co. of Ohio, Midland Bldg., Cleveland 15, Ohio.

Secretary — H. Dean Forrest, General Tire & Rubber Co., Middle Road, Ashtabula, Ohio.

PITTSBURGH

President — James H. Black, United States Steel Corp., Applied Research Laboratory, Monroeville, Pennsylvania.

Secretary — John F. Lovett, Pittsburgh Coke and Chemical Co., Neville Island, Pittsburgh 25, Pennsylvania.

SAN FRANCISCO

President — Paul A. Hesselgrave, General Electric Co., 2151 South First Street, San Jose, California.

Secretary — Gus A. Anderson, Kaiser Engineers, 1924 Broadway, Oakland 12, California.

Everyone is heading for Texas!

THE AMERICAN ASSOCIATION OF COST ENGINEERS

will hold its

FOURTH ANNUAL MEETING

JUNE 13-15, 1960

in

Houston